New BDA Integrator requirements starting November 1st, 2024.

All BDA installations in Brevard county must have approval of the local AHJ and the frequency license holder (Brevard County Emergency Management 800 MHz division) before any work may commence.

Brevard County holds the frequency license for the public safety radio system. The Brevard County Manager has authorized the Emergency Management Director or his/her designee, the 800MHz Division, to manage the public safety radio system and function as the liaison with the FCC through Administrative Order 25.

Brevard County follows NFPA 1225 for ERCES installations Key Elements of 1225:

- Chapter 18.2.1: The design of the system shall be approved by the AHJ and the frequency license holder.
- Chapter 18.2.1: Under 47 CFR, the Federal Communications Commission (FCC), the frequency license holder is legally responsible for retransmission on its licensed frequencies. Therefore, the frequency license holder must be able to review and approve every ERCES design prior to installation.
- Chapter 18.7.2: Frequency license holder written approval is required prior to initial activation of the ERCES.

Integrators must submit all required documents to the AHJ and frequency license holder to review. A design review will be done by the 800 MHz division to verify design parameters are consistent with accepted practices.

Integrators requesting a permit must submit the following documents for review:

1. Complete equipment list.
2. Heat maps showing planned system coverage. (Ex: iBwave)
3. A single line diagram of proposed system.
4. Diagram of donor antenna location on the building with azimuth to donor site.
5. Address of building where BDA is being installed.

All documents must be submitted to:

- Local Authority having jurisdiction.
- 800 MHz division at EMERMGT_800MHZRadio@brevardfl.gov

After a successful review, integrator will be given permission to begin installation.

Donor Antenna Requirements:

- Developments with more than a single building may only have one donor antenna for the entire complex.
- A donor antenna of no more that 10dBi should be used in designing a system, unless the installing contractor can show a higher gain donor antenna is necessary for the design.
- Donor antennas should never be aimed across the roof of the building they are attached to.
- All DAS antennas should be on the backside of the antenna's radiating pattern.

Isolation Test Requirements:

- A manual isolation test is required by Brevard County 800 MHz division before a final test will be conducted. **The antenna system isolation must be 20 dB greater that the maximum gain of the BDA used.**
- The use of inline attenuators/pads on the donor antenna to increase antenna isolation **will not** be an acceptable means of correcting poor isolation results. Padding of individual DAS antennas will be permitted if moving the antenna location is not feasible.
- All test equipment used by the integrator must display signal levels to prove the validity of the test.
- Contractors unable to prove isolation numbers will not be scheduled for a final test.

Commissioning Test Scheduling

Vendors must request authorization from Brevard County 800 MHz division by e-mail.

1. Send e-mail to EMERMGT_800MHZRadio@brevardfl.gov advising the time, date, location of the test, and point of contact in the event 800 MHz division needs to stop the test.
2. Once the commissioning test is completed, the system **"must be shut down"** until the final test is performed by 800 MHz division.
3. 800 MHz division will review the final results for discrepancies.

Final Test Scheduling

1. A final test will not be scheduled until all documents are completed and forwarded with your request. (See ERCES commission test and final test scheduling procedure Brevard County 800 MHz Radio System document provided by AHJ)
2. After a successful review of the documents, the final test by 800 MHz division will be scheduled through the AHJ.
3. Integrator personnel on site for the final must be NICET IB-PSC certified or have an FCC GROL license with BDA certification from the manufacture of equipment.
4. Proof of certification on site will be required before the final test starts.
5. If technician cannot produce their certification, the test will be considered a failure and need to be re-scheduled.
6. Technician on site must be able to adjust the BDA as required by the 800 MHz representative.
7. Brevard County 800 MHz Division will require the integrator to reproduce the isolation test during the final.

Coverage Requirements: NFPA 1225 Chapter:18 Sections 8,9,10

Section:18.8.3

Critical areas, including fire command centers, fire pump rooms, exit stairs, exit passageways, elevators, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ, shall be provided with 99 percent floor area radio coverage.

Section: 18.8.4

General building areas shall be provided with 95 percent floor area radio coverage.

Section: 18.9.1 Downlink.

A minimum downlink signal shall be sufficient to provide a minimum of DAQ 3.0 for voice communications using either narrowband, analog, or digital P25 signals or wideband LTE digital signals throughout the coverage area.

Section: 18.9.2 Uplink.

The uplink signal shall be sufficient to provide a minimum of DAQ 3.0 for voice communications using either narrowband, analog, or digital P25 signals or widespread LTE digital signals.

Section: 18.10 Donor Antenna.

If a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to a minimum of 20 dB above system gain.

NOTE:

*Brevard County 800 MHz, as the FCC license frequency holder**, requires antenna isolation to be 20 dB greater than the maximum gain of the Signal Booster**. Isolation numbers derived from the adjusted system gain of the unit are not accepted. 800 MHz will test antenna isolation at final with Spectrum Analyzer.*

Section: 18.12 Component Approval, Certification, and Listing.

Section: 18.12.1.1

RF-emitting devices and cabling used in the installation of in-building emergency responder communications enhancement systems shall be approved by the AHJ and the frequency license holder.

Section: 18.12.1.2

All RF-emitting devices shall have the certification of the radio licensing authority of that country and be suitable for public safety use prior to installation.

Section: 18.12.1.3

All repeaters, transmitters, receivers, signal-booster components, remote annunciators and operational consoles, power supplies, and battery charging system components shall be listed and labeled in accordance with UL 2524, *Standard for In-Building 2-Way Emergency Radio Communication Enhancement Systems*.

NOTE:

Brevard County 800 MHz division approves Signal boosters that comply with NFPA requirements and are approved by the FCC for operation under the US Code of Federal Regulations / Title 47/ Part 90 for Public Safety Land Mobile Radio.

Power Supply Requirements: NFPA 1225 Section 18.13

At least two independent and reliable power sources shall be provided for all RF-emitting devices and any other active electronic components of the system: one primary and one secondary.

Section: 18.13.1 Primary Power Source.

The primary power source shall be all of the following.

- Supplied from a dedicated branch circuit.
- Permanently connected.
- Compliant with *NFPA 72*
- Protected from overvoltage.

Section: 18.13.2 Secondary Power Source.

The secondary power source shall consist of one of the following:

- A storage battery dedicated to the system with 12 hours of 100 percent system operation capacity.
- An alternative power source of 12 hours at 100 percent system operation capacity as approved by the AHJ.
- A 2-hour standby battery and connection to the facility generator power system, providing the facility generator power system can support the complete system load for 12 hours.

System Monitoring Requirements: NFPA 1225 Section 18.14

Section 18.14.1 Fire Alarm System.

Section:18.14.1.1

The system shall include automatic supervisory signals for malfunctions of the in-building emergency responder communications enhancement system that are annunciated by the fire alarm system in accordance with *NFPA 72*.

Section:18.14.1.2

The system shall comply with all of the following:

- Monitoring for integrity of the system shall comply with Chapter 10 of *NFPA 72*.
- System supervisory signals shall include the following:
    1. Signal source malfunction
    2. Active RF-emitting device failure
    3. Low-battery capacity indication when 70 percent of the 12-hour operating capacity has been depleted.
    4. Active system component failure
- Power supply supervisory signals shall include the following for each RF-emitting device and active system components:
    1. Loss of normal ac power
    2. Failure of battery charger

Special Notes and Requirements

A donor antenna of no more that 10dBi should be used in designing a system, unless the installing contractor can show a higher gain donor antenna is necessary for the design.

*Approximately 88 percent of commercial buildings in the U.S. fall within the category of 50,000 square feet or less.

Installing a larger unit than needed; and turning down the power after its installation is not the preferred method in Brevard County and is not a good practice to follow. The size/gain of the unit should match the building following these guidelines:

1. Buildings up to 80,000 square feet can utilize, in most cases, a BDA with a maximum gain of 85dB.

2. Buildings from 80,000 to approximately 150,000 square feet can utilize, in most cases, a BDA with a maximum gain of 85dB to 95dB.

3. Buildings above 150,000 square feet or a system feeding multiple buildings may need a BDA with a maximum gain of 95 dB or more.

These guidelines are based on the information from manufacturers' literature and practical knowledge acquired over more than 20 years of experience in the field.

Vendors' proposals/designs with a booster larger than the above guidelines should include engineering heat maps with the single-line diagrams proving that a smaller unit will not achieve the requirements of NFPA 1225.

*ADRF targets smaller facilities with new in-building public-safety repeater - Urgent Comms
https://www.signalboosters.com/content/pdfs/SureCall_Guardian3_QR_Data_Sheet.pdf

Brevard County P25 Public Safety Frequencies

Channel Index	Mobile Transmit Frequency	Mobile Receive Frequency
1	806.2500	851.2500
2	806.5875	851.5875
3	806.8250	851.8250
4	807.1375	852.1375
5	807.7500	852.7500
6	808.1625	853.1625
7	808.3500	853.3500
8	808.5375	853.5375
9	806.2250	851.2250
10	806.5625	851.5625
11	806.7500	851.7500
12	807.2625	852.2625
13	807.8875	852.8875
14	808.4125	853.4125
15	808.6875	853.6875
16	808.9000	853.9000
17	806.1750	851.1750
18	806.4000	851.4000
19	807.0375	852.0375
20	807.3625	852.3625
21	807.6125	852.6125
22	807.8125	852.8125
23	808.1125	853.1125
24	808.5625	853.5625
25	806.1500	851.1500
26	806.5375	851.5375
27	806.9000	851.9000
28	807.3125	852.3125
29	807.5875	852.5875
30	807.7875	852.7875
31	808.1375	853.1375
32	808.5875	853.5875
33	808.8125	853.8125

County Wide Conventional Channels

Channel	Mobile Receive Frequency	Mobile Transmit Frequency
MA FLA	854.6375	809.6375
8TAC94	853.0125	808.0125
8TAC93	852.5125	807.5125
8TAC92	852.0125	807.0125

Table 2

Simulcast Cells and Towers

System	Site Name	Address	Latitude and Longitude
North	Scottsmoor	4950 Highway 1, Mims FL 32754	28-44-06.0 North 080-52-10.0 West
North	Titusville	1141 Day Street, Titusville FL 32780	28-26-36.0 North 080-48-34.0 West
North	Sharpes	866 Camp Road, Cocoa FL 32927	28-26-55 North 080-46-55 West
North	Rockledge	1746 Cedar Street, Rockledge FL 32955	28-19-38.0 North 080-44-10.0 West
North	Cocoa Beach	4550 Tom Warriner Blvd, Cocoa Beach FL 32931	28-18-51.7 North 080-38-03.1 West
South	Melbourne	2140 Lansing Street, Melbourne FL 32935	28-08-33.2 North 080-40-05.4 West
South	Palm Bay	140 Malabar Road SE, Palm Bay FL 32909	27-59-49.0 North 080-40-13.0 West
South	Barefoot Bay	1167 Tequesta Drive, Barefoot Bay FL 32976	27-53-25.0 North 080-32-10.0 West
South	Indian Harbour Beach	55 N. Osceola Drive, Indian Harbour Beach FL 32937	28-09-24.3 North 080-35-32.7 West

Table 3

Call signs: WNWQ632,WQSY971 and WQWU401